A New Lowland Species of *Tropaeolum* (Tropaeolaceae) from the Venezuelan Guayana

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ABSTRACT. *Tropaeolum orinocense* from southern Venezuela, the first species in the genus recorded from the upper Orinoco basin, is described.

Tropaeolum is a genus of southern temperate origin, with about 90 species native to South and Central America. The tropical and subtropical species are restricted to cool, montane areas, especially in the Andes, except for a few species that enter into coastal lowland Ecuador and Peru. In the most recent monograph of the family (Sparre & Andersson, 1991), no species was reported to occur in lowland Amazonia or Guayana.

In 1951, Leon Croizat participated in the Franco-Venezuelan expedition to the headwaters of the Orinoco River and made over 1,000 plant collections. One of these, *Croizat 790*, was a *Tropaeolum* growing on the banks of the upper Orinoco at about 300 m elevation. It was reported by Holst & Todzia (1990) as *T. fintelmannii* Wagener ex Schldl., a species otherwise known from the Coastal Cordillera of Venezuela and the Andes of Colombia, Ecuador, and Peru. In 1989, as part of a Venezuelan group retracing the previous expedition to the Orinoco headwaters, I found the same *Tropaeolum* at a single locality along the Orinoco above the mouth of the Río Ugueto, probably at the same site where Croizat collected it previously. Study of pickled flowers and additional dried specimens showed significant differences from *T. fintelmannii* and other related species of *Tropaeolum*. Consequently, the Orinoco collections are described as a new species and the only one known from Amazonian South America.

Tropaeolum orinocense P. Berry, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Río Orinoco below Raudal and Salto El Tobogán, above the mouth of Río Ugueto, 2°14′N, 63°45′W, elevation 370 m, 21 Nov. 1989, *Berry 4783* (holotype, MO; isotypes, MYF, TFAV, VEN). Figure 1.

Species haec *Tropaeolo repando* Heilborn affinis, sed floribus minoribus, calcari 24–27 mm longo, petiolo a basi folii 3–5 mm inserto, foliis manifeste quinquelobatis differt.

Slender climbing herb to 5 m long, stem glabrous to lightly strigillose. Leaves peltate, insertion index (ratio of the length of the longitudinal axis of the blade distal to the point of petiole insertion vs. the proximal part) 9:1, stipules lanceolate, ca. 1 mm long; petiole 5–7(–11) cm long, glabrous to strigillose, inserted 3–5 mm from base of leaf; blade thin-membranous, glabrous, light green on upper surface, glaucous on lower surface, ± depressed ovate, 3.2–5.5 cm long, 4.5–9.0 cm wide, the length:width ratio usually 2:3 or less often 1:2, truncate at the base, shallowly 5-lobed, the central 3 lobes shortly mucronate, principal ascending veins 3 from point of petiole insertion, the lateral ones dichotomously branched close to the base. Flowers orange-red, with slender, pendent pedicels 45–75 mm long. Calyx lobes elliptic, the uppermost lobe 5 × 4 mm, the lowermost one 9–10 × 5–6 mm, with a narrowly conical spur either straight or slightly downcurved in distal ½ to ⅓, the spur 24–27 mm long and 5–6 mm diam. at point of pedicel insertion. Petals ciliate-dentate at the apex, the cilia 2–2.5 mm long, the upper two petals (opposite the pedicel) cuneate, 5–6 × 3–4 mm (excluding the cilia), the lower three spathulate-unguiculate, the blade 2.5–3.5 × 3–4 mm, somewhat concave, the claw smooth and 5–6 mm long. Stamens 8, slightly uneven, filaments 4–6 mm long, anthers 2 × 1 mm. Ovary 3-angled; style 2–3 mm long, trifid at apex, one lobe longer than the other two. Mericarps 1(–3?), ca. 5 × 3 mm, brown.

Paratypes. VENEZUELA. AMAZONAS: Ugueto, upper Río Orinoco, *Croizat 790* (VEN).

Morphologically, this species strongly resembles *Tropaeolum repandum* Heilborn, a lowland species from coastal Ecuador and northern Peru. The two are very similar in the apical position of the petal cilia and in the shape of the upper and lower petals; the depressed ovate to reniform leaf shape is also common to both species. *Tropaeolum orinocense* differs, however, in its smaller flowers and the leaves with a higher petiole insertion ratio and a higher length to width ratio. Details of petal coloration, a useful character at the species and sectional level, require further observation of fresh flowers.

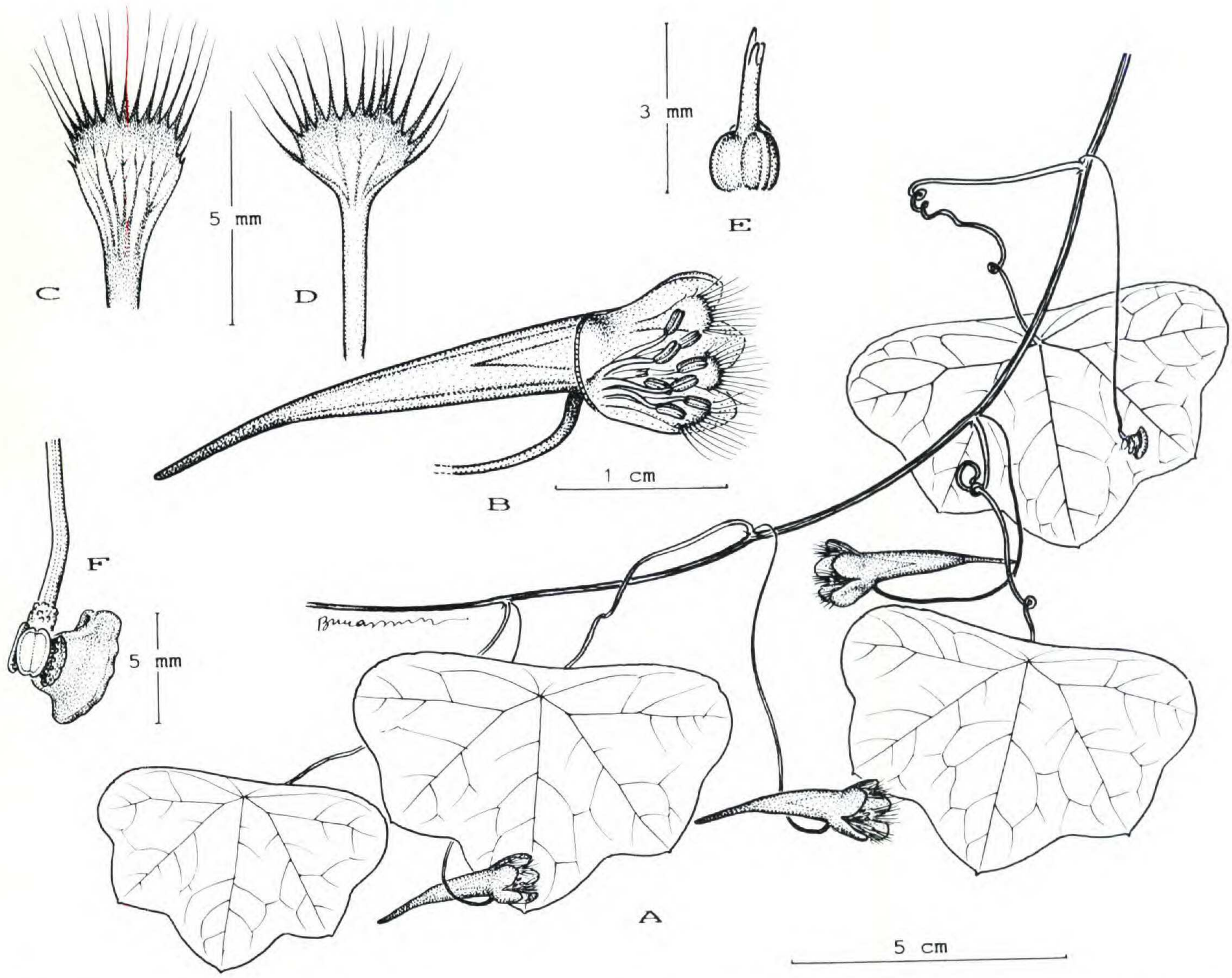

Figure 1. *Tropaeolum orinocense* P. Berry, drawn from *Berry 4783*. —A. Habit. —B. Flower, with sepals and petals partially removed to reveal the staminal arrangement. —C. Upper petal. —D. Lower petal. —E. Gynoecium at anthesis. —F. Single mericarp.

Tropaeolum orinocense is also similar in leaf shape and apically serrate-ciliate petals to *T. lasseri* Sparre, from northeastern Venezuela, and *T. emarginatum* Turcz., from northeastern Colombia. The flowers of *T. lasseri* are much smaller, however, and *T. emarginatum* has leaves with the petiole inserted much farther from the margin and petals with yellow and purple coloration.

Specimens of *Tropaeolum orinocense* were previously determined as *T. fintelmannii*, a species from northern Venezuela and Andean Colombia to Peru, but that species has a shorter calyx tube, the upper petals with fewer apical cilia, and the lower petals larger, more elliptic, and serrate-ciliate along the entire blade (not just the apex).

Sparre & Andersson (1991) established ten sections in *Tropaeolum* in their monograph of the family. They placed *T. repandum* in section *Serratociliata*, a group of mostly red-flowered species centered in the northwestern Andes, whereas *T. emarginatum*, *T. lasseri*, and *T. fintelmannii* were placed in section *Tropaeolum*, a wide-ranging group from southern Mexico to Peru. There is no clear delimitation between these two sections, however, which leaves the sectional placement of *T. orinocense* in doubt. Pollen morphology favors its placement in section *Tropaeolum*, since it has type A grains (equilateral triangle in polar view, with three identical pores), following the classification of pollen types in the family by Ricardi et al. (1957) and later modified by Huynh (1968). Type A grains occur in section *Tropaeolum*, but not in section *Serratociliata*, which has type B grains (isosceles triangle in polar view, with one smaller pore), as in *T. repandum*, or else type D grains (biaperturate and elongate).

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